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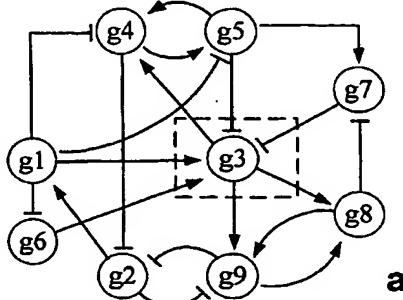
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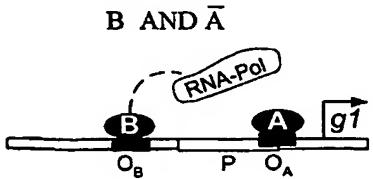
(54) Title: GENETIC COMPUTING USING COMBINATORIAL TRANSCRIPTION CONTROL



(57) **Abstract:** A scheme is provided for selecting the regulatory DNA sequences to exert combinatorial control of gene transcription in vivo by multiple regulatory proteins, i.e., transcription factors (TFs). The method provides the ability to implement a wide range of complex logic functions through the manipulation of the regulatory DNA sequences, typically several hundred bases in length. The method includes procedures for selecting the strengths of the binding sites of different TFs and their relative positioning in order to implement a plurality of different logic functions.

A	B	<i>g</i> ₁	<i>g</i> ₂	<i>g</i> ₃	<i>g</i> ₄	<i>g</i> ₅	<i>g</i> ₆
low	low	OFF	OFF	OFF	ON	OFF	ON
high	low	OFF	OFF	ON	ON	ON	OFF
low	high	ON	OFF	ON	ON	ON	OFF
high	high	OFF	ON	ON	OFF	OFF	ON

b



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